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NUCLEAR EMERGENCY OPERATIONS PLANNING FOR
EVACUATION OF URBANIZED AREAS (BRAVO NEOP).

VOLUME I

INSTITUTE FOR DEFENSE ANALYSES

PREPARED FOR
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SUMMARY

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The planning described herein was developed from the actions taken by local areas in evacuating and hosting population during natural disasters such as hurricanes and floods. From these actions, a logical extension was made to a concept of operations to evacuate population in the event of a perceived nuclear threat. This concept of operations was used to outline a plan for the reactions and plans required by all jurisdictions (State, Evacuating, and Host) to move and host a population when so directed by higher authority. The actions taken as part of the total evacuation plan are discussed by section, and the total actions are exhibited on a flow chart. Missions, responsibilities, and tasks of the five operating services are explained.

Checklists for planning actions and responses to specific events during the evacuation procedures were developed for the Evacuating Jurisdiction, the Host Jurisdiction, and the State. These checklists include the necessary actions for evacuation of the threatened metropolitan area, for the hosting of evacuees in specified areas, and for the State that would exercise general control of the evacuation. The checklists appear in Volumes II, III, and IV.

PAPER P-959

NUCLEAR EMERGENCY OPERATIONS PLANNING
FOR EVACUATION OF URBANIZED AREAS
(BRAVO NEOP)

Volume I

by

Abner Sachs

for

Defense Civil Preparedness Agency
Washington, D.C. 20301

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PROGRAM ANALYSIS DIVISION
400 Army-Navy Drive, Arlington, Virginia 22202

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FOREWORD

This paper outlines the actions that should be taken at several local governmental levels (State, Evacuating Jurisdiction, and Host Jurisdiction) to respond to a requirement to evacuate areas at risk due to an impending nuclear attack. The research described herein was conducted under the auspices of the Defense Civil Preparedness Agency, Contract No. DAHC 20-70C-0287, Task Order B-2612F. The Task Order specified the following objective and scope of work for the research project:

Objective: To develop concepts for relocating population from high-risk zones during the threat of nuclear warfare instead of using in-place shelters. The contingency plans and actions by emergency operating services (in both the evacuated and relocation areas before, during, and after relocation) will be developed in this study.

Scope of Work: Within the objective set forth above, prepare emergency planning tools, and emergency service annexes thereto, for use by planners at the zone and area levels in the pre-attack relocation of major portions of high-risk zones.

The assistance given by Messrs C. O. Layne, M. P. Bowden and Robert Lansford, and the other members of the Staff of the Division of Defense and Disaster Relief of the Department of Public Safety of Texas is gratefully acknowledged. Checking planning documents and assistance in developing data and pilot plans was done by Messrs Martin Eser, Armin Puck and William Stallings of the San Antonio Civil Defense Office; their help is gratefully acknowledged. Miss Mattie Treadwell, State Liaison Officer of Region V, DCPA, rendered her usual capable assistance and guidance during the research.

The entire project was monitored by Mr. George C. Van den Berghe of Headquarters, DCPA. As Contracting Officers' Technical Representative, he gave many helpful suggestions during the course of the research.

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SUMMARY

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GLOSSARY

Advisory	A message giving warning information about potential disasters. It gives details on location, intensity, movement and precautions that should be taken.
ALFA NEOP	Nuclear emergency operations planning for in-place protective actions.
Annex	A document appended to an operation order or other document to make it clearer or to give further details. The annex is prepared by the service having responsibility for that activity. It becomes part of the emergency plan of the service.
Attached Organization	An organization not normally assigned to a Service but over which the Service has operating control during an emergency.
Auxiliary Personnel	An organized group of volunteer or quasi-professional people who have had specific training in a given area of action. These groups are generally sponsored by or affiliated with an operating government function.
BRAVO NEOP	Nuclear emergency operations planning involving evacuation.
CSP	Community Shelter Plan, a plan that assigns population groups to the best available shelter, including home basements.
DCPA	Defense Civil Preparedness Agency, formerly known as Office of Civil Defense (OCD).
D&C	Direction and Control consists of the Chief Executive (Mayor, County Judge, Governor, etc.), his deputy, chiefs of the emergency operating services, and any supporting staff (such as communications controller, public

	information officer, and legal adviser) as deemed necessary. This is the control group in the EOC during emergency operations.
Emergency Public Communication System	The public broadcast system used by the Chief Executive of a jurisdiction to communicate official messages and advisories to the residents.
EOC	Emergency Operating Center, the operations center during the emergency. It includes all communications and control equipment and the staff. It is described in Chapter E-2 of the Federal Civil Defense Guide.
Evacuating Jurisdiction	The jurisdiction that is sending its people into safer areas.
Expedient Shelter	A predesigned shelter which is built in shelter-deficient areas in accordance with specific population protection plans.
Host Jurisdiction	The jurisdiction in which evacuees are lodged.
Increased Readiness Actions	Those actions which state and local governments take to increase their ability to respond to and ameliorate the effects of a disaster.
IRIS	Increased Readiness Information Service, by which State governments and selected local governments provide periodic reports of actions taken during a crisis period.
Industry Committees	Liaison groups from local companies who maintain close contact with the jurisdiction to insure that timely warning of impending emergency action is received. These groups also advise the jurisdiction on the effects of the emergency on the industrial establishments.
Mutual Aid Agreements	Written or unwritten understandings among jurisdictions which cover methods and types of assistance available during all phases of the emergency.
NADOP	Natural Disaster Operation Plan.

NEOP	Nuclear Emergency Operations Planning.
NEXTUP	A code word for the next higher operating center, or communications link to the state level.
RADEF	Radiological Defense, the methods, plans and procedures involved in establishing and exercising defensive measures against the radiation effects of an attack by nuclear weapons or radiological warfare agents.
Service	An arbitrary functional grouping of normal governmental organizations for ease of operational control during emergencies.
Service Annex	That part of a disaster plan that is prepared by (and describes the duties of) the components of a service during the emergency. It is included as part of the overall Nuclear Emergency Operations Plan (NEOP).
Service Cadre	The full-time personnel of the jurisdiction's departments and services. During emergencies this cadre is augmented by volunteers and trained auxiliary organizations.
SA	Staging Area, a preselected location having large parking areas and shelter for equipment and vehicle operators. The SA provides a base for coordinated emergency operations and for postattack population support and recovery activities.
SOP	Standing Operation Procedures, a written, detailed set of actions which are carried out in response to a given contingency by an operating organization. An SOP lists persons, places, methods, and activities to accomplish the assigned task(s).
Strategic Evacuation	The evacuation of metropolitan areas to the surrounding countryside in accordance with prepared plans within 72 hours of a strategic warning.
Strategic Warning	A notification that enemy initiated hostilities may be imminent. The time element may vary from minutes to hours, to days, or more prior to the initiation of hostilities.

Tactical Evacuation	Movement of the population to fallout shelters in reaction to tactical warning.
Tactical Warning	A notification that the enemy has initiated hostilities. Such warning may be received any time from the launching of the attack until it reaches its target.
Traffic Control Points	Places along evacuation routes that are manned by police to direct and control movement to and from the area being evacuated.
Triggering Event	A significant major event that will trigger the preplanned actions in the checklist.
Volunteer Personnel	Individuals who make themselves available for assignment during an emergency. These people may or may not have particular skills needed during an emergency and generally are not part of an organized group.

Chapter I. INTRODUCTION

A. BACKGROUND

During the mid-1950s the Office of Civil Defense, the predecessor organization of the Defense Civil Preparedness Agency (DCPA), financed the development of state and local plans for evacuating urban areas on receipt of warning of an imminent nuclear attack (tactical evacuation). Over the past two decades, studies conducted by the Institute for Defense Analyses and other research institutes for the DCPA have indicated the effectiveness of evacuating populations as a means of reducing casualties from nuclear attack.* Similar studies have been conducted abroad. The Soviet Union, for example, has developed a rather extensive dispersal and evacuation program for its population.** Norway and Sweden have also developed and published evacuation plans.†

* See, for example, Jeremy J. Stone, Arms Control and Civil Defense: The Question of Crisis Evacuation (Annex 1), (New York: Hudson Institute, August 1963); J. Edwin Becht, Cost Factors in Establishing and Maintaining a Prepositioned Civil Defense Capability for a Successful Evacuation of Houston, Texas, Paper prepared for the IDA (July 1964); and the following papers published by the Institute for Defense Analyses, Arlington, Virginia: J. L. Bickley, A. Sachs, W. C. Truppner, Shelters for a Movement to Shelter System, N-375 (September 1966); G. J. Kelleher, The Life-Saving Potential of a Movement to Shelter: A Case Study of the New Orleans Metropolitan Area, S-302 (November 1967); G. J. Kelleher and D. Moody, The Economics Impact of Activating an MTS System: A Case Study of the New Orleans Economy, S-303 (March 1968); G. J. Kelleher, Allocating Contested Space in a Regional Movement to Shelter System: A Case Study of the Central Gulf Coast Region, P-310 (January 1967).

** Information on Soviet evacuation planning can be found in the following publications: L. Goure, Recent Developments in Soviet Civil Defense 1969-1970, (Coral Gables, Florida: University of Miami, May 1971); L. Goure, Soviet Civil Defense--Urban Evacuation and Dispersal, (Coral Gables, Florida: University of Miami, May 1972); N. I. Alabin, et al., Civil Defense, Vyshaya Shkola (November 1970), translated at Oak Ridge National Laboratory, March 1972; N. I. Akimov, et al., Civil Defense, Handbook and Aids for Higher Agricultural Institutions (Moscow, 1969), translated at Oak Ridge National Laboratory, April 1971.

† Both countries published their evacuation plans in their local telephone directories; a translation of these plans, "Evacuation Plans for Oslo, Norway and Stockholm, Sweden," is included in a separate IDA Memorandum Report to DCPA dated July 1973.

These developments, along with the increased knowledge derived from research into population assignments by computer, indicate that the next logical step in population protection should be the development of planning tools as guidance for the preparation of plans for population relocation (strategic evacuation). Similar planning guides for the evacuation of populations prior to slowly developing natural disasters have proven to be useful tools for officials for both planning purposes and actual emergency operations.*

Research into this subject received additional impetus from a 1972 Department of Defense Directive which stated, in part, that it was the function of the Defense Civil Preparedness Agency to "develop plans for implementation during periods of international crisis of an evacuation program and an expedient shelter program."**

B. APPROACH

Population evacuation planning is only one of several alternatives (e.g., in-place shelters) for reducing casualties in the event of a nuclear attack and consequently has to be developed as a part of other long-range civil defense plans. Since the United States has had no practical experience in nuclear emergency operations, there is no body of experienced planners, like those engaged in natural disasters operations planning, from whom empirical information could be garnered. Thus, the nuclear emergency planning tools developed in this paper are based on the knowledge and experience gained in developing similar tools for natural disaster operations planning. Extension of this experience to strategic planning required the co-operation and assistance of knowledgeable persons in the natural disaster evacuation planning area.

* A. Sachs and J. D. Kiernan, Natural Disasters Operations Planning for Slowly Developing Disasters, P-884, Volume I, Institute for Defense Analyses, Arlington, Virginia (July 1972)--also issued by DCPA with the same title as documents CPG-2-2B, C and D (Field Test Review Draft, March 1973).

** Department of Defense Directive 5105.43, Defense Civil Preparedness Agency (DCPA), July 14, 1972.

As in the IDA development of planning tools for natural disaster evacuation, DCPA Region V and particularly the State of Texas were chosen for this initial study for developing planning tools.* The Division of Defense and Disaster Relief of the Texas Department of Public Safety offered its cooperation and services in the development of planning tools and handbooks for use in area evacuation planning. Arrangements were made with a test evacuation jurisdiction, the City of San Antonio, to base its plans on the planning tools being developed in the course of this research project. Thus, it was possible to test and amend the planning tools as they were developed and to partially complete evacuation plans. (Completion of the plans in San Antonio is anticipated at a later date when all the necessary data become available). The hosting and route assignments that were critical to the plan development were completed early in the project and were used as a basis for all other planning, such as residential population locations, police and fire patrol assignments, traffic control, and the like.

Prior to selecting the test city, it was first necessary to determine whether or not evacuation of the metropolitan areas of the State of Texas was feasible and what parameters would have to be set to conduct the evacuation and provide for hosting of the evacuees. Coordination was maintained with DCPA in selecting the cities at risk, which not surprisingly turned out to be the major population centers. Certain other parameters were set in coordination with both DCPA and the State of Texas:

- All urban area with populations greater than 50,000 would be evacuated.
- Eighty percent of population of those cities would be evacuated.
- No host community would have a population (including evacuees) exceeding 50,000.

* DCPA Natural Disaster Operations Planning for Slowly Developing Disasters, CPG 2-2B, 2-2C, 2-2D (Field Test Review Draft, March 1973), Washington, D. C.

- All host communities and counties would have a final population of three times their original population, subject to the limitations above.
- A buffer ring of 10 miles would be maintained around each evacuated urban area. (This zone would not be evacuated, nor would any evacuees be hosted there.)

Using these parameters, the Adagio computer program developed at IDA for use in planning the evacuation of urban areas was run, and populations were assigned to host areas.* Adjustments were then made in the assignments to accommodate the requirements of State officials, and those final assignments were used as a basis for planning by both the evacuating city and the host areas.

Because the Adagio program was successful in determining allocations of population for evacuation purposes, research was begun on development of a series of planning tools (checklists and planning and reference data handbooks), and the planning tools were tested in the selected city. Planning actions for the following tasks were developed by the evacuating city:

- Assign population to the host areas.
- Control movement of evacuees to the road net serving the host areas.
- Maintain law and order and fire patrols.
- Determine the numbers of essential workers who would commute from the host area to the evacuated areas.

The various planning guides were revised as suggested actions were found to be either inadequate or unnecessary.

While this research was underway, similar actions were being taken with the Host Jurisdictions selected by the State so that the planning tools for those areas would also be practicable. During the entire research effort, liaison with both the State of Texas and the DCPA was maintained to ensure that the planning tools would meet the requirements of all agencies involved and to accommodate

* For details of this computer program see L. Schmidt, A Study of National Travel Requirements for Strategic Evacuation, P-702, IDA, Arlington, Virginia (March 1970).

any policy changes that ensued from the pilot efforts in this research area.

The planning tools developed in the course of this research are contained in Volumes II, III, and IV (State Checklist, Evacuating Jurisdiction Checklist, and Host Jurisdiction Checklist, respectively) of this report and in IDA Paper P-976, Population Relocation Under Threat of Nuclear Attack--Planning and Reference Data Handbook. The first set of documents specifies the actions to be taken for evacuation of the jurisdiction at risk, for the maintenance of evacuees during the time they were away from home, and for the return home of evacuees. The latter document outlines the methods and provides data for developing plans to accomplish the movement and hosting of evacuees.

Chapter II. GENERAL CONCEPTS OF NUCLEAR DISASTER OPERATIONS

A. GENERAL

The U. S. civil defense system has had the mission of protecting lives since its establishment. The original legislation states that "It is the policy and intent of Congress to provide a system of civil defense for the protection of life and property."* This intent has been amplified in the Code of Federal Regulations by the following definition: "The term 'civil defense' means all those activities and measures designed or undertaken (1) to minimize the effects upon the civilian population caused or which would be caused by an attack upon the United States... (3)...and, when appropriate, the non-military evacuation of civil population...."**

Since the enactment of the above legislation, several methods have been advanced for population protection. The fallout shelter program, which was designed to provide space for most of the population of the United States, is still the primary method for in-place population protection. During the mid-1950s, tactical evacuation was considered an alternative method of population protection because of the long warning time that derived from aircraft delivery of nuclear weapons. As the Intercontinental Ballistic Missile (ICBM) became operational, however, tactical evacuation became less practical and the concept fell into limbo. Nonetheless, the mandate for evacuation as a means of population protection still remained in the law and was reaffirmed in the 1972 Department of Defense Directive

* Federal Civil Defense Act of 1950, PL 920, 81st Congress, Section 2 (50 USC App. 2251, 65 Stat. 1246; 72 Stat. 532).

** Federal Civil Defense Act of 1950, Section 3 (50 USC App. 2252, 64 Stat. 1247).

establishing the DCPA. Today, strategic evacuation is one more concept of population protection to be considered. Plans for the strategic evacuation of urban areas at risk should be part of a comprehensive Civil Protection Plan (CPP) for all urban communities, along with the Community Shelter Plans (CSP), Natural Disaster Plans, and other civil emergency plans.

B. LOCAL PLANNING FOR PRE-ATTACK EVACUATION

A general concept of emergency operation as a framework for planning and training has been outlined in the DCPA Attack Environment Manual, particularly Chapter 9.* This same concept has been used (a) to increase the ability of a jurisdiction to respond to an emergency through planning and training and (b) to develop the objectives of a jurisdiction's plans for evacuating its population or hosting evacuees from another jurisdiction.

The general objectives of emergency relocations are to reduce population concentrations and thus reduce the hazard from prompt nuclear effects. The specific objectives of the emergency operations undertaken for an evacuation are as follows:

- To minimize the effects of a nuclear attack on the population by planned actions for evacuation.
- To protect property in the evacuated jurisdiction.
- To maintain the health and well-being of the evacuated population until return home is possible.
- To maintain operation of essential and life-support facilities.

Realization of these objectives is based on the movement of large numbers of people from urban areas at risk to relatively safe urban and rural hosting jurisdictions. As in natural disaster evacuation, this movement poses problems of coordination among jurisdictions through which the evacuees pass and in which the evacuees will be

* DCPA Attack Environment Manual, prepared by Research Directorate, DCPA, June 1972.

hosted, large-scale traffic control, expedient shelter construction, mass feeding and health care, as well as state coordination of these and other problems that may arise.

At the present time, some jurisdictions have developed evacuation plans to counteract the effects of natural disasters. Very few, if any, however, have up-to-date plans for evacuation during a nuclear crisis. Planning of this sort should be encouraged at the local level with coordination and guidance by the state, based on national objectives promulgated by DCPA. Even after such plans have been developed, it might not be possible to test their efficiency; nevertheless, plan development and periodic exercise of those portions of the plan involving government personnel would help to make the plans more credible and practicable.

In the State of Texas, the basis for state planning for evacuation and, in turn, for local planning is contained in the Emergency Operations Plan.* The plan states:

Cities and/or counties [will] develop, implement, test, and execute plans for Civil Defense and Disaster Relief in their respective jurisdictions.... The decision to order the public to take shelter or evacuate to any designated area as a result of radioactive fallout or during any emergency rests with the officials of local government based on the information available pertaining to the situation. Evacuees become the responsibility of local government when entering an area for shelter.

Thus, the legal basis for planning evacuation at the local level, at least in Texas, has been established; and planning tools that were developed in the course of this investigation could be used effectively in accomplishing part of the Civil Defense mission of that state and other states.

* State of Texas, Emergency Operations Plan, Department of Public Safety, Division of Defense and Disaster Relief (Austin, Texas, November 1966).

C. EVACUATION WARNING

The threat from a slow-moving natural disaster can be perceived by those jurisdictions that lie in its path. The Federal Government has developed an elaborate warning system to advise jurisdictions not only of the threat but even of the approximate arrival time of the potentially damaging natural force.

However, perceived nuclear threats are not so clear; collating apparently isolated incidents and international tensions into a perceived threat early enough to trigger an evacuation advisory is especially difficult. An unusually clear indication of a nuclear threat might be a satellite photograph showing that a potential enemy had instituted evacuation of his population centers. This indication might in turn initiate a counter-evacuation of American cities.

Moreover, the warning process is not clearly established. Such warning would generally be transmitted through command channels from the Federal Government to the governors of the various states. However, some states have laws permitting the governor to authorize evacuation if he perceives a nuclear threat.

D. CONTINGENCY ACTIONS

Contingency actions may be described as those actions taken in response to an advisory given by the Federal or State government. Contingency action plans should be developed at all governmental levels to prepare for efficient evacuation of the population. The State is responsible for the coordination of all local plans. Further, the State is responsible for the decision to escalate the entire contingency situation from initial alert for movement of the population to the final decision to begin evacuation.

The contingency situations to be considered in developing evacuation plans are defined as follows:

- Plan A - Internal Readiness: Actions taken when warning is received to review plans or to commence actions to prepare for possible evacuation. These include all actions taken by a jurisdiction prior to the actual mobilization of staff resources (checking status of plans and equipment and updating plans as required).
- Plan B - Mobilization: Actions required to activate personnel and equipment necessary to evacuate urban areas and to reduce population concentration. These actions also include the activation of facilities required to lodge, feed, and sustain evacuees and preparations for continued operation of essential facilities in the evacuated area.
- Plan C - Evacuation: Actions required to alert and evacuate population from urban areas at risk to hosting areas. These include actions to lodge, feed, and sustain the population for the period of the evacuation until they are advised that they may return to their homes.

Within each of the contingency situations is a series of events that require some actions by the government. These events were developed to cover any possible situation that might occur prior to or during an evacuation. The events are intended as guides to trigger actions which can be modified to reflect the local jurisdiction's requirements.* The events for each of the contingency situations follow:

- Plan A - Internal Readiness:
- (1) Review plans (in the event of a threatening international situation).
 - (2) Commence internal government readiness.
 - (3) Prepare for mobilization of forces (in the event of an apparent increase in tension levels).
 - (4) Decrease level of readiness (in the event tension levels decrease).

* For complete actions to be taken under each event, see Volumes II, III, or IV, as applicable.

Plan B - Mobilization: (1) Mobilize forces (evacuation will probably commence in the immediate future).
(2) Prepare for evacuation.
(3) Decrease level of readiness.

Plan C - Evacuation: (1) Initiate evacuation.
(2) Move evacuees.
(3) Complete evacuation (assign lodging spaces; care for evacuees; operate evacuating jurisdiction at reduced emergency levels).
(4) Permit evacuees to return home; operate all areas under normal conditions, insofar as possible.

It must be emphasized that only the State has overall responsibility for all evacuations and therefore must be kept informed of all phases of the operation and, particularly, must be advised when problems arise that cannot be solved at the local levels. Because of the complexity of any mass movement, only the State has the facilities and communication capability to handle large-scale situations promptly.

Chapter III. NUCLEAR EVACUATION OPERATIONS PLANNING

A. ORGANIZATION

A typical organization for all levels of emergency operations has been developed and modified over the years.* The latest organization and assignments are shown in Tables 1 through 6. The organization consists of Direction and Control (Executive Staff) and five emergency operating services--Police, Fire, Medical, Shelter, and Resource. (This organization is also contained in Chapter 9 of the DCPA Attack Environment Manual.)

The Direction and Control Staff (D&C) is composed of the Chief Executive of the jurisdiction, the Service Chiefs, elected officials, Civil Defense Director, public information specialists, legal advisors, and other supporting staff as deemed necessary by the Chief Executive. It has the responsibility for all actions taken during the emergency. The D&C staff should be kept as small as possible, consonant with adequate control of both the planning function and operations before and during the evacuation.

Generally, the five emergency operating services are staffed from cadres provided by the normal governmental operating departments, with such additional personnel as may be required to perform the emergency function. Suggested sources of service components

* Some of the original concepts are discussed in Department of Defense, Office of Civil Defense, Emergency Operating Center--Operations, Organization and Staffing for Municipalities and Counties with Less than 300,000 Population, Federal Civil Defense Guide, Part E, Chapter 2, Appendix 4 (April 1967).

Modernizations of this organizational concept are contained in two later organizations: Department of Defense, Office of Civil Defense, Local Emergency Action Checklist (Field Test Edition), FG G-1.2/2 (June 1971); and Department of Defense, Defense Civil Preparedness Agency, Natural Disaster Operations Planning Guide, Field Test Review Draft, CPG-2-2B (March 1973).

Table 1. DIRECTION AND CONTROL

Mission Statement	Assign missions and tasks, direct planning, monitor the attack environment, inform the public, and control emergency operations.	
Basic Responsibilities	Command	Information
Task Assignments	<ol style="list-style-type: none"> 1. Provide emergency information and guidance to the public, including attack warning. 2. Acquire information on the attack environment, analyze information, and inform Services of Basic Operating Situation. 3. Monitor execution of planned actions and direct modified actions as necessary. 4. Keep NEXTUP informed of situation, requirements for aid, and availabilities. 5. Set priorities, resolve conflicting demands for resources, and authorize major operations, such as shelter emergence. 	
Possible Organizational Components	<p>Chief executive of jurisdiction (command) Service chiefs Commissioners or other elected officials Civil Defense Director and staff, especially RADEF Communicators News Media Legal Advisers</p>	

Table 2. POLICE SERVICE

Mission Statement	Maintain law and order through traffic and crowd control both outside and in-shelter, provide security for vital facilities and supplies, and control access to operating scenes and vacated areas.	
Basic Responsibilities	Maintain Law and Order	Movement Control
Task Assignments	<ol style="list-style-type: none"> 1. Provide traffic and crowd control in accordance with CSP during the movement-to-shelter period. 2. Provide mission support to shelter managers, both in-shelter and in event of remedial movement from untenable shelters. 3. Establish security for vital facilities and supplies. 4. Control access to operating scenes and vacated areas and prevent looting. 5. Protect inmates of correctional institutions. 	
Possible Organizational Components	Police Department Sheriff's Department Constable's Department Department of Public Safety Auxiliary Police Private Security and Guard Services Military Units, if available	

Table 3. FIRE SERVICE

Mission Statement	Prevent and suppress or control fire, lead search-and-rescue of entrapped persons, and assist in relocation of population threatened by fire.	
Basic Responsibilities	Fire Defense	Rescue
Task Assignments	<ol style="list-style-type: none"> 1. Organize and enforce fire prevention measures to reduce the vulnerability of buildings and areas to fire. 2. Provide leadership and training of the public and self-help teams in suppressing ignitions. 3. Provide leadership and training of teams to locate and rescue entrapped persons. 4. Suppress or control fire at staging areas, vital facilities, and fire breaks. 5. Assist the Police Service in the relocation of those threatened by fire. 	
Possible Organizational Components	Fire Department Auxiliary Fire and Rescue Units Private Fire and Safety Personnel	

Table 4. MEDICAL SERVICE

Mission Statement	Provide emergency medical care both outside and in-shelter, institute environmental sanitation measures, and coordinate interment of the dead.	
Basic Responsibilities	Medical Care	Health and Sanitation
Task Assignments	<ol style="list-style-type: none"> 1. Provide medical care and sanitation supervision in public shelters. 2. Establish post-shelter treatment centers, including hospitals, and define treatment standards in consonance with available manpower and supplies. 3. Inspect and analyze water supplies, sewage treatment, food stocks, and feeding facilities. 4. Reinstitute environmental sanitation measures, including vector control. 5. Identify the dead and coordinate interment. 6. Operate an ambulance service. 	
Possible Organizational Components	Health Department Coroner; Medical Examiner Local Medical, Dental, and Veterinary Associations Hospitals and Clinics Ambulance Companies Local Morticians Mosquito Control Board Sanitation Department Private Exterminators	

Table 5. SHELTER SERVICE

Mission Statement	Provide shelter leadership and organization, provide support for persons displaced from other zones, and provide for the immediate needs of people upon shelter emergence, including welfare services.	
Basic Responsibilities	Shelter Management	Welfare
Task Assignment	<ol style="list-style-type: none"> 1. Provide organized shelter leadership, including control of in-shelter supplies. 2. Direct shelter remedial actions where sheltered groups are threatened by the attack environment or other hazards. 3. Provide for the immediate needs of people on emergence from shelter, including feeding, lodging, clothing, registration, counseling, and reuniting of families. 	
Possible Organizational Components	Welfare Department Personnel and Employment Service American Red Cross School Board Disaster Relief Groups Retail Trade Associations	

Table 6. RESOURCE SERVICE

Mission Statement	Control essential supplies and equipment, provide emergency supplies of water, power, transport, and other services, coordinate repair and restoration of vital facilities, demolish hazardous structures, remove debris, and decontaminate contaminated areas.	
Basic Responsibilities	Control and Supply of Resources	Repair and Rehabilitation
Task Assignments	<ol style="list-style-type: none"> 1. Supply and resupply shelters, staging areas, and medical facilities. 2. Maintain inventory control (including procurement) of food, water, medical supplies, petroleum products, transport, and other essential supplies and equipment. 3. Provide emergency supplies of water, power, transport, and other essential services to authorized users. 4. Remove debris and decontaminate. 5. Coordinate damage assessment, demolition, and repair of roads, housing, and vital facilities. 6. Provide manpower support for other Services. 	
Possible Organizational Components	<p> Department of Public Works Streets, Parks, Water, and Sewerage Departments Departments of Finance, Assessor, Licenses and Permits Taxicab and Trucking Companies Planning Authority Public and Private Utilities Construction Industry Associations USDA County Emergency Board Industry Committees USDL Employment Service </p>	

are shown in Tables 1 through 6. Each jurisdiction should realize that not all components listed are part of its structure and that, in many instances, other components are available which are not included in the tables. Under the direction of the Service Chief, these components should prepare annexes to the service plans that are part of the Nuclear Evacuation Plan. Guidance and data to assist in preparation of the plans and annexes are contained in a separate publication.*

Tables 1 through 6 also outline the missions and suggested task assignments of the separate service organizations. By developing task assignments within the scope of capabilities of the augmented emergency service, it is possible to prevent overlapping of responsibility, to assure that specific emergency tasks are assigned, and to inform the other services of task responsibilities. The suggested task assignments may be expanded or contracted to meet either the jurisdictional requirements or specific local conditions. Once assignments and plans have been developed, the plan content, the efficacy of the plan development, and the reasonableness of the operating doctrine can be tested against the checklists for each jurisdiction contained in Volumes II, III, and IV of this report. These checklists, together with a suitable scenario, can be used in desk-top or EOC exercises to train personnel and to determine whether or not the evacuation plans are reasonable and operable.

B. DEVELOPMENT OF THE EVACUATION OPERATIONS PLAN

The Nuclear Evacuation Operations Plans (NEOP) are part of a group of emergency contingency plans which include those for Natural Disasters, Community Sheltering, in-place Nuclear Emergency Operations, and any other plans that might be developed to handle local problems (e.g., riots). The BRAVO NEOP is unique in that local jurisdictions generally do not activate this set of plans

* A. Sachs, C. D. Kepple, and G. C. Rothrock, Population Relocation Under Threat of Nuclear Attack: Planning and Reference Data Handbook, IDA P-976.

except on advice from higher authority, usually the State. The State's decision to activate the plans results from advice received from the Federal Government or from the Governor's perception of a threatening international situation.

The Local and State plans should be checked and tested periodically to insure that they reflect current preparedness measures, changes or additions in personnel or jurisdictional responsibilities, changes in government structure, and new developments in techniques of evacuation. Periodic exercises should also be held to train key personnel in their duties and to familiarize new personnel with the command structure and planning. Lodging, feeding and other life-support facilities, communications, and movement planning and equipment should be checked periodically and updated as required. The existence of a plan, however complete, is no guarantee that the plan will be of any value in an emergency unless it is current and all persons who are required to perform some function are fully aware of their duties and responsibilities if an emergency arises.

1. Plan A - Internal Readiness

When advised by higher authority to activate Plan A, all jurisdictions involved should take those actions necessary to increase their readiness to carry out their responsibilities. The actions considered here are graduated responses to a perceived threat from an enemy. Initially, actions should be taken to update plans and accelerate preparedness measures. If the jurisdictions are advised that the threat has become more serious, then actions to activate the EOC and to check the internal readiness of each jurisdiction should be started. If international tensions develop more rapidly than anticipated, the BRAVO NEOP plan provides for accelerating actions by moving to either Plan B (Mobilization) or Plan C (Evacuation). If a nuclear weapon is actually delivered, the plan also provides for a shift to the ALFA NEOP (in-place) emergency plans.

The events included in Plan A and a summary of the actions to be taken in response to each event are indicated in Table 7 and illustrated in the upper panel of Figure 1.

Table 7. SYNOPSIS OF PLAN A - INTERNAL READINESS

Events Considered in Plan A	Summary of Response to Event
1. Threatening International Situation: Advised to re-view plans	Coordinate among State and jurisdiction chiefs concerning review and updating of evacuation and hosting plans; review traffic flow, staging-area location, lodging and feeding facilities, police and fire deployment, CSP, and expedient shelter plans, and medical personnel assignments; review assignment of essential workers; advise NEXTUP when reviews are completed.
2. Advised to commence internal government readiness	Brief all Service Chiefs and key personnel; check readiness of EOC by testing all systems; maintain contact with all key officials and establish standby status for all involved personnel; update all plans as necessary; establish news policy; initiate IRIS reporting system.

2. Plan B - Mobilization

Plan B includes those actions required to activate personnel, equipment, lodging, and life-support facilities necessary to move people from the jurisdiction at hazard to the host areas. The plan is activated on advice from NEXTUP (next highest operating center) in all cases. The local jurisdictions then take the actions required by their emergency operation plans to assure that evacuation and hosting of evacuees will be accomplished. The jurisdiction should be fully mobilized during this period so that evacuation may begin promptly when advice to do so is received from higher authority.

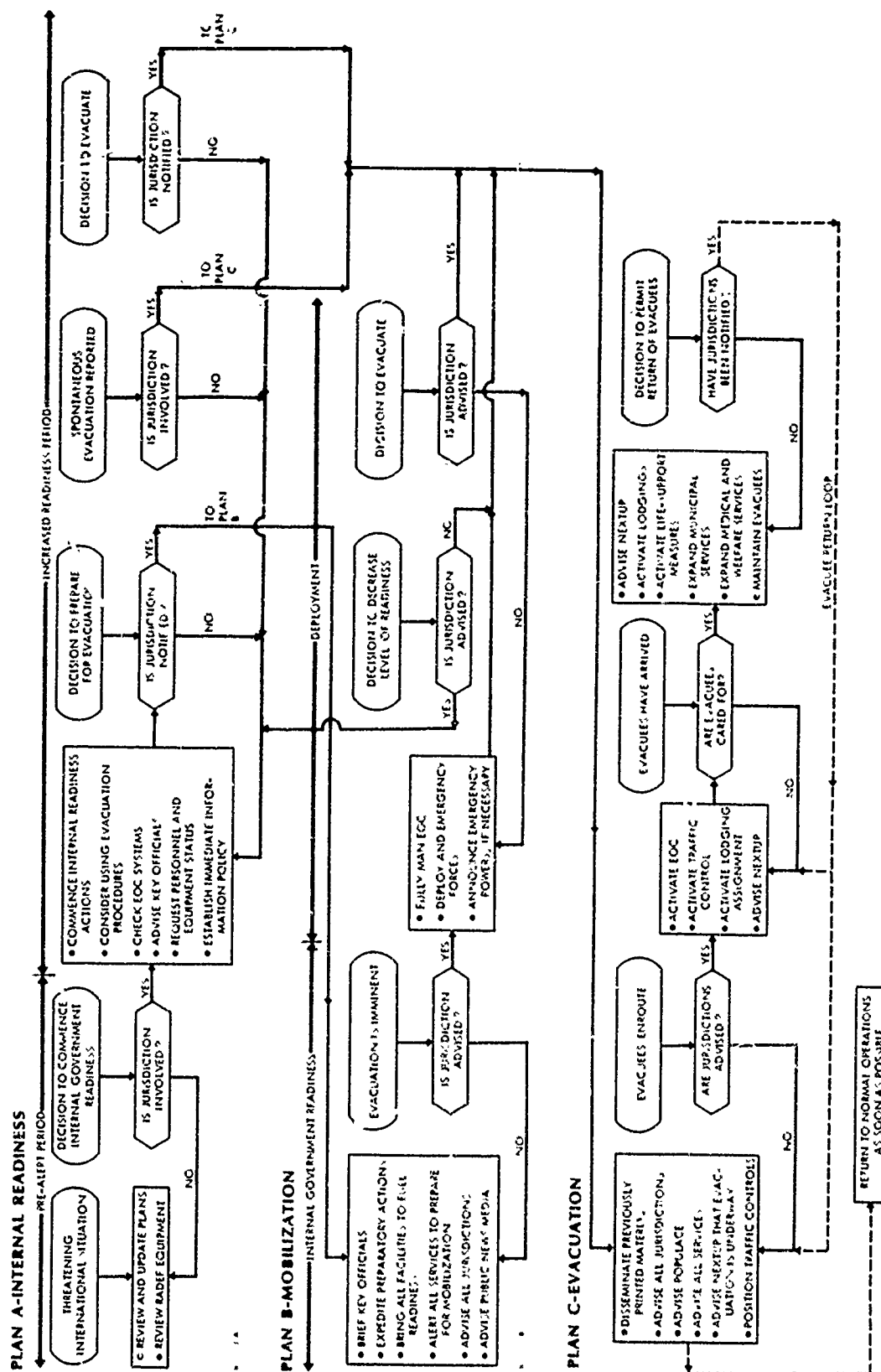


Figure 1. INTERRELATIONSHIP OF PLANS A, B, AND C

The events included in Plan B and a summary of the actions to be taken in response to each event are listed in Table 8 and illustrated in the center panel of Figure 1.

Table 8. SYNOPSIS OF PLAN B - MOBILIZATION

Events Considered in Plan B	Summary of Response to Event
1. Decision (or advice) to mobilize forces	Bring D&C facilities to partial readiness; review all preparatory actions; establish 24-hour duty watch; prepare for dissemination of information to public; consider redeployment of RADEF instruments; alert all Services to start preparatory actions for deployment of forces and movement of personnel; prepare for augmentation of life-support items.
2. Evacuation is imminent	Bring D&C facilities to full readiness; advise all Services that evacuation will begin within specified time limits; move all personnel and equipment to preassigned locations; post traffic control signs; advise food-distribution and other essential industries of conditions; check all communication systems; activate Staging Areas. Advise NEXTUP of state of readiness for evacuation.
3. Advised to decrease level of readiness	Return to appropriate level of readiness.

3. Plan C - Evacuation

The decision to evacuate is made by the State and is based on information generally received from Federal authorities. When the decision to evacuate the population has been made, Plan C is activated. This plan includes (a) actions required to alert and move population from the risk areas to those jurisdictions that will lodge and care for them during the emergency and (b) the actions of the Host Jurisdiction, the Evacuating Jurisdiction, and the State

during the entire period. Plan C requires (a) careful delineation of routes, (b) means of access to the road system, and (c) use of the road system to avoid serious problems with traffic control during the evacuation period. Careful consideration by the Host Jurisdictions must also be given to the maintenance of the evacuees to assure their continuing health and welfare during the crisis period. Medical, sanitation, and police plans must be made in detail; at the same time they must be flexible enough to allow for unforeseen contingencies during the crisis.

The return of the evacuees to their homes is also part of Plan C. Without careful and detailed plans, this return could become chaotic and cause serious consequences for the health and economy of the area.

The events included in Plan C and a summary of the actions to be taken in response to each event are listed in Table 9 and illustrated in the bottom panel of Figure 1.

C. TOTAL PLANNING INTEGRATION

1. State and Federal Coordination

Planning for crisis evacuation requires careful coordination among all levels of government from the Federal Government to the smallest local jurisdiction. Initially, the Federal Government must advise each State of the designated metropolitan areas at risk in its jurisdiction and assign the population from those areas to hosting areas. Risk analysis can be done only by the Federal Government in coordination with the State which may have special knowledge of certain areas not immediately available to the Federal Government. For many areas of the country, evacuation to hosting areas will require interstate movement because of lack of evacuee facilities in a given State within reasonable distance from the areas to be evacuated. Federal planning of host areas through a computer-assignment program ensures that several areas to be evacuated do not claim the same host areas for their citizens. If host area assignments were made locally,

Table 9. SYNOPSIS OF PLAN C - EVACUATION

Events Considered in Plan C	Summary of Response to Event
1. Advised (decision made) to evacuate	Advise public and disseminate previously printed evacuation instructions to populace; advise all Services and jurisdictions that evacuation is under way; allow free flow of evacuees for specific period; move population from Staging Area to Host Jurisdiction; expedite any uncompleted actions under Plan B.
2. Evacuation is under way (evacuees have entered Host Jurisdiction)	Augment police patrols and traffic controllers; check evacuated residences; expedite movement from Staging Area; register and lodge evacuees; issue instructions for feeding, health, care, etc.; keep NEXTUP advised of situation.
3. Evacuee-support operations underway	Advise NEXTUP of numbers of evacuees; keep EOC in operation; institute traffic control, feeding, sanitation measures; institute rationing if necessary; augment garbage and refuse collection; provide recreation facilities; institute periodic health inspections and police patrols; commence construction of expedient shelter. Provide commuting for essential workers where required.
4. Evacuees permitted to return to home jurisdictions	Man EOC on 24-hour basis; advise all Services; reactivate traffic control points and police guards; arrange for return of equipment and personnel to home jurisdiction; arrange for disposition of drugs; arrange for sanitary inspection of lodgings; assemble public transportation; open food and fuel distributors. Advise all local industries.
5. Evacuees have departed	Advise NEXTUP of situation; clean up lodgings; inventory property; inspect and handle sanitary fills and waste disposal areas; maintain and repair parking lots, roads, etc.; remove road blocks; return to normal operations as soon as possible.

population concentrations in host areas could become as dense as those in the areas being evacuated, causing problems where facilities for handling large population influx do not exist.

Population assignments made at the Federal level should be coordinated with the State or States involved in the movement from specific areas so that the State planners have the opportunity to make adjustments based on their knowledge of local conditions and road networks. Such coordination will also give the States involved in the evacuation the opportunity to amend their Mutual Aid Agreements if necessary.

Having received the evacuation and host assignments, the States are then able to coordinate and direct the local planning as a result of their knowledge of the reasons for assignments and their inputs to the assignments and risk-analysis decisions. Local planning can then be overviewed by the State to assure conformity with national objectives. As part of the planning process, the State will also be aware of the deficiencies of personnel, equipment, lodgings, shelters and the like in the local jurisdictions and will be able to plan to alleviate the problems that might arise with evacuation.

2. Local Jurisdiction Coordination

While the State coordinates the plans of all local jurisdictions to ensure that they conform with State requirements and to enable the State to better prepare its plans for aid to the jurisdictions receiving evacuees, the evacuating jurisdiction must prepare its plans to move population from the risk areas to the host areas. Planning coordination with the host jurisdictions (within or outside the State) is essential so that the authorities in those jurisdictions know the routes of the evacuees, the means of travel, the assistance to be received from the evacuating jurisdiction, the means of food distribution, and the like. Planning by either the evacuating or host jurisdiction cannot be done in a vacuum but must be coordinated constantly over the entire planning process so that

problems can be solved as they arise or, if necessary, can be referred back to the State for solution.

D. TOOLS FOR TOTAL PLANNING INTEGRATION

The total evacuation plan starts with the perception of a strategic threat by higher authority and the request to start internal government readiness actions as a prelude to possible evacuation. It ends with the return of the citizens to their home communities. Figure 1 is a flow chart that shows the interrelationship of this overall plan and the points at which recycling within a section or leaving any section of the entire system is possible. Within each plan section are the actions considered during that phase of the Nuclear Emergency Operations Plan for evacuation. This flow chart should assist the planner in each jurisdiction to organize the plan subsections to fit the needs of his particular jurisdiction. The Jurisdiction Checklists (Volumes II, III, or IV) cover in much greater detail the actions shown on Figure 1. Each of the checklists is applicable to a particular jurisdiction with different functions to perform during the evacuation period. The checklists and the flow chart should assist the planner to visualize the composition of a comprehensive evacuation plan and to ensure that no important details are overlooked. To assist the planner in developing a standardized type of plan and to provide him with suggested guidance for the plan contents, another IDA publication P-976, Population Relocation Under Threat of Nuclear Attack: Planning and Reference Data Handbook, has been prepared and is available on request. With these guides each planning staff should be able to develop a comprehensive, uniform plan for its jurisdiction.

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